UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MEMORANDUM   March 27, 2000

Subject: **Oxamyl RED Chapter Addendum:** Corrections to the Chapter Resulting From
             Dupont's Error Corrections and Comments on Preliminary Chapters, Dated February
             18, 2000

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This memo lists the corrections to EFED's risk assessment chapter for oxamyl resulting from the
2/18/00 error correction comments from Dupont. A separate memo which provides responses to
Dupont's comments accompanies this document.

The recommended changes correspond to the numbered points in the February 18th gross error
corrections and comments on the EFED Risk Assessment chapter. For each point in which a
change was made, the page, section, and paragraph/table have been identified. Since not every
point resulted in a revision, some numbers may be skipped in the list below. Please note that, for
whatever reason (likely due to differences in printer configurations), the pages in Dupont's
comments do not always correspond to the pages in the EFED chapter. Therefore, we've also
tried to identify the section heading/subheading for the revision.

Dupont Comments on the "Tier II EEC Chapter"

NO changes. Do not include this memo as a part of the RED chapter.   The drinking water assessment portion of the EFED chapter incorporates the pertinent information, along with the data and documentation, and should be used rather than this memo.

Dupont Comments on Gross Errors in the EFED Chapter

1.   <u>Page 2, top of page</u>: change "oxaime" to "oxime".

2.   <u>Add the following to the end of the "Aquatic Metabolism: paragraph on p. 2</u>:

On February 18, 2000, the registrant submitted a 1995 study (Degradability and Fate of 1-^{14}C Oxamyl in Water/Sediment Systems;" MRID 450453-05) which suggests that, even accounting for hydrolysis, metabolic degradation may occur in water/sediment systems. However, the pH of the system became increasingly alkaline in this study so that a quantitative separation of the metabolism component of degradation is difficult. Because OPP has not identified significant aquatic risk concerns with oxamyl, results of this study, if scientifically valid, will not change the bottom-line risk assessment. This study has not been reviewed in detail; no conclusions as to its acceptability as a guideline study have been drawn.

<u>Revise the 2nd Paragraph of the Risk Characterization (p. 28) to Read</u>:

Depending on the method of application and the site and weather conditions, oxamyl is likely to move by runoff to surface water, leaching to ground water, or a combination of both. Soil incorporation will reduce the amount of oxamyl available at the surface that could move with runoff waters to adjacent fields or water bodies. While oxamyl can reach surface waters by spray drift or runoff, it is not likely to persist (through a combination of hydrolysis in neutral to alkaline waters, photolysis in acidic waters, and possibly microbial breakdown) in most cases and is not expected to pose unacceptable risks to most aquatic organisms, other than risks to freshwater and estuarine/marine endangered invertebrates and risks to non-target freshwater invertebrates that may be mitigated through restricted use classification.

3.   <u>Revise the first part of Table 2 (p. 3) as follows (changes are redlined)</u>:

Table 2: Summary of Environmental Chemistry and Fate Parameters For Oxamyl [Methyl 2-(dimethylamino)-N-[[(methylamino)carbonyl]oxy]-2-oxoethanimidothioate] (See Text for Analysis)

Parameter	Value	Reference/Comments *
	Selected Physical/Chemical Parameters	
Water Solubility	2.8 x 10^5 mg/L (ppm) at ~~20~~ 25° C	Montgomery (1991)
Vapor pressure	3.8 x 10^{-7} mm Hg (25° C) 2.3 x 10^{-7} mm Hg (20° C)	EFGWB One-Liner Montgomery (1991)
Henry's Law Constant	2.38 x 10^{-7} atm m^3 mol^{-1} (measured) 3.9 x 10^{-13} atm m^3 mol^{-1} (calculated)	EFGWB One-Liner Dupont (2000)

Table 2: Summary of Environmental Chemistry and Fate Parameters For Oxamyl [Methyl 2-(dimethylamino)-N-[[(methylamino)carbonyl]oxy]-2-oxoethanimidothioate] (See Text for Analysis)

Parameter	Value	Reference/Comments *
Octanol/Water Partition	$K_{ow} = 0.33$	Montgomery (1991)

5.   Page 7, Revise the last sentence of the 2nd Paragraph of *Drinking Water Exposure Assessment* Section:

The oxime degradate appears to be more persistent in ground water and a chronic value ~~for this degradate should be~~ of 3 μg/L oxime should be used for screening purposes, based on observed concentrations in PGW studies (see **Perspective Ground Water Monitoring Studies** below).

6.   Revise Page 8, 2nd Paragraph in the Section *Non-targeted Ground Water Monitoring Data* as follows :

In the USGS NAWQA studies, oxamyl was not detected in ground water samples above the detection limit (0.018 μg/L) in any of the 3144 samples analyzed. ~~Figure 1 shows the~~ A comparison of NAQWA sampling areas (the study unit map at the USGS NAWQA web page is available electronically at **http://water.usgs.gov/nawqa/nawqamap.html**) and oxamyl use areas~~. There appears to be~~ (information on the distribution of the major crops on which oxamyl is used can be found on the USDA National Agricultural Statistics Service web site at **http://www.nass.usda.gov/census/**) shows reasonable overlap between sampling locations and use areas.

7.   Page 9/10, revise the 4th sentence in the section *Non-targeted Surface Water Monitoring Data*:

The analytical detection level for the NAWQA data was typically reported as 0.018 μg/L with average recovery efficiency of 56 %.

In the same paragraph, replace "Whatcom County, CA" with "Linden, WA":

Ten of the reported detections were from a single station in ~~Whatcom County, CA~~ Linden, WA.

8.   Page 13, Revise the 2nd Paragraph in the Section *Ecological Incident Data*:

~~Oxamyl may be responsible for~~A report on honeybee kill incidents (I005855-001;1/1/95) ~~reported in a summary of~~summarized from American beekeepers in 22 ~~S~~states for 1995-96 noted that oxamyl may be responsible for the bee kills. No further information was provided.

9.   Page 16/17, Table 6:

(a) Change the RQ value for Cotton/aerial from 6.9 to 7.5:

Cotton / aerial	1lb/A x 4 (6-da interval)	Short grass	$410/145^2$	**8.2**	**16.4/5.8**
		Tall grass	188/62	**3.8**	~~**6.9**~~ **7.5/2.5**
	4 lb/A total	Broadleaf plants/Insects	230/77	**4.6**	**9.2/3.1**
		Seeds	26/12	**0.50**	**1.0**/0.5

(b) Change column headings in Table 6 to match those of Table 5.

10. <u>Page 18, Table 7</u>:

(a) Change the footnote language in Table 7 to read:
where the % body weight consumed (as a decimal) varies with body size and diet:.

(b) Add the following to the end of Table 7:

Levels of Comparison	
Endangered species may be affected (acute risk)	≥ 0.1
Acute risk may be mitigated through restricted use, in addition to endangered species risk	≥ 0.2
High acute risk, including endangered species	≥ 0.5

NOTE: Since this table only reports acute RQ values, only those LOCs are reported here.

11. <u>Page 19/20, Table 8</u>:

(a) Delete the "/1000" in the footnote equation for LD_{50}/square foot:

$$LD_{50}/ft^2 = \frac{mg/ft^2}{LD_{50} \text{ mg/kg x wt. of organism (kg)}/1000}$$

(b) Add the following at the end of Table 8:

Levels of Comparison	
Endangered species may be affected (acute risk)	≥ 0.1
Acute risk may be mitigated through restricted use, in addition to endangered species risk	≥ 0.2
High acute risk, including endangered species	≥ 0.5

NOTE: As with Table 7, this table only reports acute RQ values.

12. <u>Page 19/20, Revise the Section *Incorporated banded/in-furrow applicaitons*, and Table 9</u>:

Incorporated banded/in-furrow applications: Banding and incorporation of oxamyl can reduce the amount of the pesticides exposed at the surface. Table 9 uses the LD_{50}/ft^2 concept to illustrate the effect of incorporation and banding on exposure. The amount of active ingredient per unit of soil is used to calculate an estimation of exposure to wildlife. The modeled crops include single soil applications to tomatoes (1.25 lbs ai/A), potatoes (4 lb ai/A) and carrots (8 lbs ai/A).

Table 9. Avian and Mammalian Acute Risk Quotients From Single Applications of Oxamyl to Soil With Incorporation.

Crop (lbs ai/A)	Bandwidth/ Row Spacing/depth	Nontarget organism (surrogate species / average body weight)	LD$_{50}$ (mg/kg) [1]	RQ (LD$_{50}$/ft^2)
Tomato (CA) (1.25)	2"W / 60-66" / 2" Sidedress: shanked in ~~No incorporation~~Incorporated	Avian (Duck / 1.2 kg) Mammal (Rat / 0.3 kg)	3.2 2.5	~~5.4~~0.03 ~~23.2~~0.16
Potato (4)	2-4"/ 36 inches row center to row center/ 5-6" depth Incorporated at plant	Avian (Duck / 1.2 kg) Mammal (Rat / 0.3 kg)	3.2 2.5	0.1 0.4
Carrot (8)	1" / 12" / 2" Incorporated	Avian (Duck / 1.2 kg) Mammal (Rat / 0.3 kg)	3.2 2.5	0.02 0.09

Levels of Comparison	
Endangered species may be affected (acute risk)	≥ 0.1
Acute risk may be mitigated through restricted use, in addition to endangered species risk	≥ 0.2
High acute risk, including endangered species	**≥ 0.5**

[1] LD$_{50}$/ft^2 = exposed mg ai/ft^2
$\qquad$ LD$_{50}$ x Body wt.
where exposed mg ai/ft^2 = mg ai/ft^2 x % unincorporated (decimal)

~~A~~No avian and mammalian high acute~~, restricted use, and endangered species~~ LOCs are exceeded for modeled uses ~~that do not provide~~because of soil incorporated applications. However, concentrations may be higher at row-ends and turn areas, thereby possibly increasing hazard in those areas. Also, unincorporated uses would likely present higher risk because this assessment assumes that only one percent of the applied granules will be exposed with incorporation.

14.   Page 29-31, add the following citations to the "References with no MRID #" section:

Buck, N.A., B.J. Estesen, and G.W. Ware. 1980. Dislodgable insecticide residues on cotton foliage: Fenvalterate, permethrin, sulprofos, chlorpyrifos, methyl parathion, EPN, oxamyl, and profenofos. Bull. Environ. Contam. Toxicol. 24:283-288. Cited in Willis and McDowell (1987).

Ware, G.W., B.J. Estesen, and W.P. Cahill. 1978. Dislodgable insecticides residues on cotton (1975). Bull. Environ. Contam. Toxicol. 20:17-19. Cited in Willis and McDowell (1987).

Willis, G.H., and L.L. McDowell. 1987. Pesticide persistence on foliage. Rev. Environ. Contam. Toxic. 100:23-73.

16.   Revise the first four entries of Table C-1, p. 38 of Appendix C to include units and references:

Table C-1. PRZM/EXAMS environmental fate input parameters for Oxamyl.

Parameter	Value	Data source
Molecular Weight	219	Montgomery (1991)
Solubility	2.8×10^5 mg/L (ppm) at 25° C	Montgomery (1991)
Vapor Pressure (torr)	3.8×10^{-7} mm Hg (25° C)	EFGWB One-Liner
Henry's Law Constant	2.38×10^{-7} atm m^3 mol^{-1} (measured)	EFGWB One-Liner

17.   <u>Page 46, Appendix C, Examples of GENEEC and SCI-GROW Runs</u>:

Delete the sections "Example GENEEC Run and Output" and "SCI-GROW Output."

<u>Page 9/10, Ground Water Resources Section, "Modeling" paragraph</u>:

Delete the entire "Modeling" paragraph, which contains the onl

18.   <u>Page 52: Revise the Terrestrial EEC Calculations at the end of Appendix D as follows</u>:

<u>Tomato</u>

For 60-inch row spacing and 2" bandwidth, sidedress shanked (~~un-~~**incorporated**): (All equations shown)

0.~~0002295~~0001435 lb ai/1,000 ft of row = 1.25 lb ai/acre/ [43,560 sq ft/acre/(60 in row spacing ~~X~~ x 1 ft/12 in)]
0.167 Bandwidth (ft) = 2 in x 1 ft/12 in
~~17.38~~ ai (mg)/sq ft = 453,590 mg/lb x [0.~~0002295~~0001435 lb ai/1,000 ft of row /(1,000 ft x 0.167 bandwidth (ft))]
~~17~~10.90 ai (mg)/sq ft = 453,950 mg/lb x [0.0001435 lb ai per (ft) x 0.167 bandwidth (ft)]
0.~~38~~12 Exposed ai (mg)/sq ft = 1~~7~~0.~~38~~90 ai (mg)/sq ft x ~~+~~ 0.01 (1~~00~~ percent unincorporated)

> **Duck:** LD$_{50}$s/sq ft = ~~17.38~~0.12 Exposed ai (mg)/sq ft /3.2 LD$_{50}$ x 1.2 weight of bird (kgs) =~~5.4~~**0.03**
> **Rat:**   LD$_{50}$s/sq ft = ~~17.38~~ 0.12 Exposed ai (mg)/sq ft /2.5 LD$_{50}$ x 0.3 weight of ~~bird~~rat (kgs) = ~~23.2~~**0.16**

<u>Potato</u>

For 36-inch row spacing and 3" bandwidth, **(incorporated)**: (All equations shown)

0.0002754 lb ai/1,000 ft of row = 4 lb ai/acre/ [43,560 sq ft/acre/(36 in row spacing ~~X~~ x 1 ft/12 in)]
0.25 Bandwidth (ft) = 3 in x 1 ft/12 in
~~31.21~~ ai (mg)/sq ft = 453,590 mg/lb x [0.0002754 lb ai/1,000 ft of row /(1,000 ft x 0.25 bandwidth (ft))]
31.20 ai (mg)/sq ft = 453,950 mg/lb x [0.0002754 lb ai per (ft) x 0.25 bandwidth (ft)]
0.31 Exposed ai (mg)/sq ft = 31.2~~1~~0 ai (mg)/sq ft x 0.01 (1 percent unincorporated)

> **Duck:** LD$_{50}$s/sq ft = 0.31 Exposed ai (mg)/sq ft /3.2 LD$_{50}$ x 1.2 weight of bird (kgs) = **0.1**
> **Rat:**   LD$_{50}$s/sq ft = 0.31 Exposed ai (mg)/sq ft /2.5 LD$_{50}$ x 0.3 weight of ~~bird~~rat (kgs) = **0.4**

<u>Carrot</u>

For 12-inch row spacing and 1" bandwidth, (**incorporated**):   (All equations shown)

0.0001836 lb ai/1,000 ft of row = 8 lb ai/acre/ [43,560 sq ft/acre/(12 in row spacing ✗ x 1 ft/12 in)]

0.08 Bandwidth (ft) = 1 in x 1 ft/12 in

6.60 ai (mg)/sq ft = 453,590 mg/lb x [0.0001836 lb ai/1,000 ft of row /(1,000 ft x 0.08 bandwidth (ft))]

ai (mg)/sq ft = 453,950 mg/lb x [0.0001836 lb ai per (ft) x 0.08 bandwidth (ft)]

0.07 Exposed ai (mg)/sq ft = 6.60 ai (mg)/sq ft x 0.01 (1 percent unincorporated)

Duck: LD_{50}s/sq ft = 0.07 Exposed ai (mg)/sq ft /3.2 LD_{50} x 1.2 weight of bird (kgs) = **0.02**

Rat: LD_{50}s/sq ft = 0.07 Exposed ai (mg)/sq ft /2.5 LD_{50} x 0.3 weight of ~~bird~~rat (kgs) = **0.09**